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TORCH

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Fig. 1.

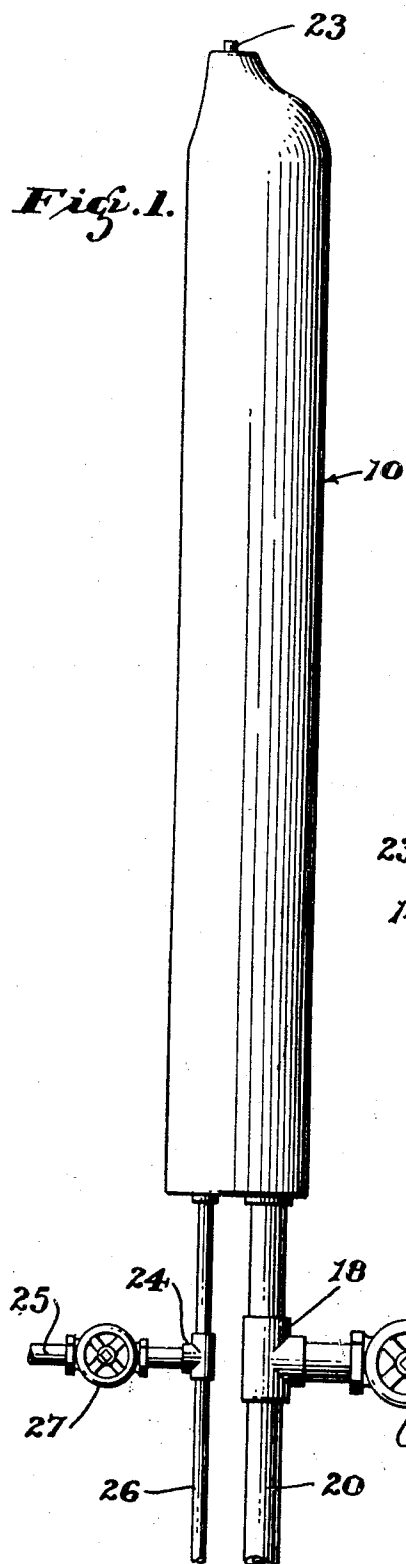


Fig. 2.

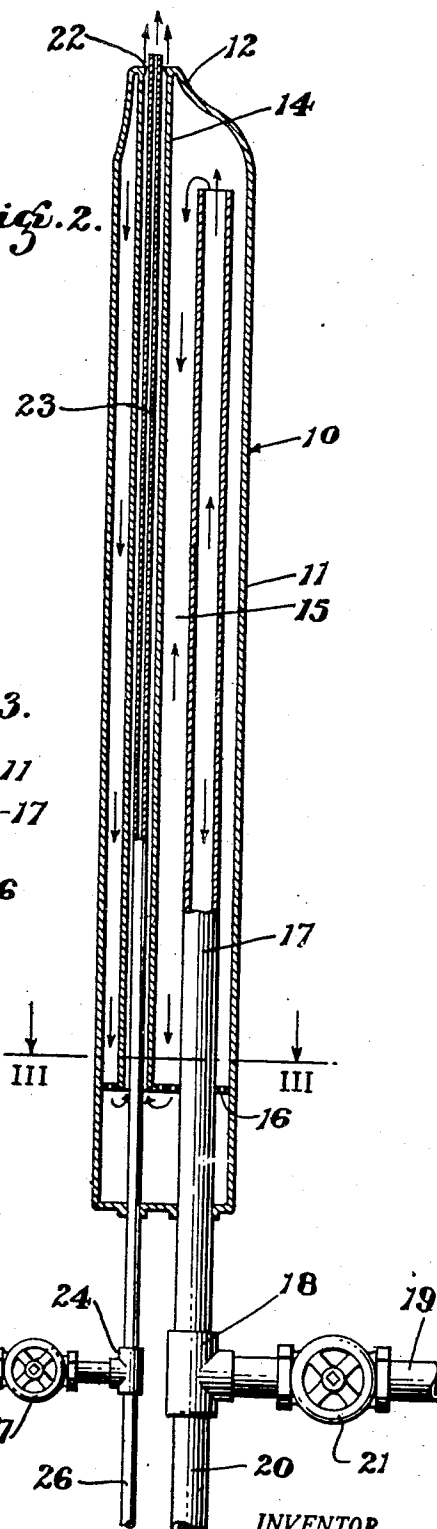
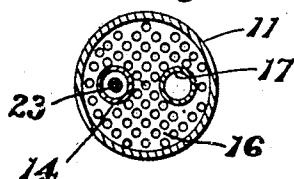


Fig. 3.



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TORCH

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This invention relates to blow torches and has for its principal object the provision of a simple and efficient blow torch capable of utilizing natural gas as a fuel.

5 In carrying the invention into practice the air and natural gas are admitted to a primary chamber in the torch and caused to mix before being ejected at the burner tip. This holds the flame closely adjacent to the tip which is, of course, essential. To create a flame of intense heat for welding or burning, the torch is constructed so that oxygen or compressed air or both may be ejected directly at the burner tip.

15 One form which the invention may assume is exemplified in the following description and illustrated by way of example in the accompanying drawings, in which:

20 Fig. 1 is a side elevation of a torch embodying the preferred form of my invention.

Fig. 2 is a central section through the same.

Fig. 3 is a transverse sectional view taken on line III—III of Fig. 2.

25 Referring more particularly to the accompanying drawings, 10 indicates a torch or burner utilizing natural gas as a fuel. This torch or burner comprises an exterior or outer casing 11 preferably cylindrical in form and having one end restricted as at 12. Arranged within this outer casing 11 is an inner tube 14 which is joined with the outer casing 11 at the restricted end 12 thereof. As the tube 14 is considerably less in diameter than the casing 11 a primary mixing chamber 15 is formed therebetween. The tube 14 terminates short of the end of the casing 11 opposite the restricted end 12 thereof. At this point a perforated baffle plate 16 is interposed between the tube 14 and the casing 11 and is, of course, disposed within the primary mixing chamber 15.

45 The end of the casing 11 which is opposite its restricted end 12 is what I prefer to term the inlet end of the torch. Projecting through this end of the casing is a gas and air pipe 17 which projects into the primary mixing chamber 15 to a point just short of the restricted end 12 of the casing 11. At its outer end this pipe 17 is fitted with a T 18 so

that it may be connected to a source of natural gas by a pipe 19 and a source of compressed air by a pipe 20. Both of these pipes are fitted with control valves 21 which may be manipulated to regulate the amount of air and gas injected into the casing 11 through the pipe 17.

The end of the tube 14 at the restricted end of the casing 11 is open so as to form a burner opening or nozzle 22. Arranged concentrically within the tube 14 is a compressed air and oxygen pipe 23. This pipe extends longitudinally through the burner and its outer end projects slightly beyond the burner nozzle 22 as illustrated in the drawings. The other end of the pipe 23 is fitted with a T 24 which connects with an oxygen inlet pipe 25 and a compressed air inlet pipe 26. These pipes are both controlled by regulating valves 27 so that the amount of oxygen or compressed air admitted to the pipe 23 for ejection at the burner opening may be controlled.

In operation of the device the pipe 19 is connected with a source of natural gas, as it is the object of the present invention to provide a burner utilizing natural gas as a fuel. The pipes 20 and 26 are connected with a source of compressed air and the pipe 25 is connected with a source of oxygen. To start the burner the valves 21 of the pipes 19 and 20 are opened a proper amount and the natural gas and compressed air is discharged into the primary mixing chamber 15 adjacent the restricted end of the casing 11.

50 In order to discharge at the burner nozzle 22 the gas and air injected into the casing 11 from the pipe 17 must travel along the primary mixing chamber 15 through the perforated baffle plate 16 and then along the entire length of the inner tube 14. The air and gas are caused to swirl in the primary mixing chamber 15. This, together with the passing of the gas and air through the baffle 16, thoroughly mixes the gas and air so that a combustible mixture will be discharged at the burner nozzle 22 which may be ignited. This is very important as it enables the flame to be maintained close to the burner opening or nozzle, which is essential.

I desire to point out that the lack of air in natural gas prevents it from igniting until it has mixed with a sufficient quantity of air. Thus, if the natural gas and air were ejected directly at the nozzle without first mixing the same the flame would be spaced from the nozzle and result in an inoperative burner. I overcome this, of course, by first mixing the air and gas before discharging it under pressure from the nozzle.

If it is desired to obtain a flame of intense heat for welding or cutting, compressed air or oxygen can be discharged from the pipe 23 at a point just beyond the nozzle 22. As the tip of the pipe 23 extends just beyond the burner nozzle the gas flame will not be blown away from the nozzle. This is likewise important.

I have found in actual practice that a burner constructed in accordance with my invention is very efficient for use in connection with natural gas and can be regulated so as to obtain a flame of desired heat.

While I have shown the preferred form of my invention, it is to be understood that various changes may be made in its construction by those skilled in the art without departing from the spirit of the invention as defined in the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A torch including a casing, a tube therein terminating in a nozzle, means for delivering gas and air into the casing whereby it will pass through the tube and discharge at the nozzle, a pipe arranged concentrically of the tube for delivering oxygen and air at the nozzle.

2. A torch including a casing, a tube arranged therein and terminating at one end in a nozzle, a mixing chamber surrounding the tube and communicating therewith at the other end thereof, means for delivering gas and air to the mixing chamber at a point where the gas and air must reverse its direction of flow before passing through the tube to the nozzle.

3. A torch including a casing, a tube arranged therein and terminating at one end in a nozzle, a mixing chamber surrounding the tube and communicating therewith at the other end thereof, means for delivering gas and air to the mixing chamber at a point where the gas and air must reverse its direction of flow before passing through the tube to the nozzle, a perforated baffle plate interposed between the tube and mixing chamber to assist in mixing the gas and air.

4. A torch including a casing, a tube therein terminating in a nozzle, means for delivering gas and air into the casing whereby it will pass through the tube and discharge at the nozzle, a pipe arranged concentrically of the tube for delivering oxygen and air at the

nozzle, said pipe projecting a slight distance beyond said nozzle.

5. A torch including a casing, a tube arranged therein and terminating at one end in a nozzle, a mixing chamber surrounding the tube and communicating therewith at the other end thereof, means for delivering gas and air to the mixing chamber whereby it will pass from the mixing chamber through the tube and discharge at the nozzle, and a pipe arranged to extend through said tube for delivering oxygen and compressed air at the nozzle.

6. A torch including a casing, a tube arranged therein and terminating at one end in a nozzle, a mixing chamber surrounding the tube and communicating therewith at the other end thereof, means for delivering gas and air to the mixing chamber at a point where the gas and air must reverse its direction of flow before passing through the tube to the nozzle, and a pipe arranged to extend through said tube for delivering oxygen and compressed air at the nozzle.

7. A torch including a casing, a tube arranged therein and terminating at one end in a nozzle, a mixing chamber surrounding the tube and communicating therewith at the other end thereof, means for delivering gas and air to the mixing chamber whereby it will pass from the mixing chamber through the tube and discharge at the nozzle, a perforated baffle plate interposed between the tube and mixing chamber to assist in mixing the gas and air, and a pipe arranged to extend through said tube for delivering oxygen and compressed air at the nozzle.

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